REMARKS

Applicants thank Examiner Nguyen for conducting the kind and courteous discussion with Applicants' representative, Daniel R. Evans, on November 17, 2004. The content of the discussion is reflected in the amendments to the claims and the comments contained herewith.

An aspect of the present invention is directed to a foreign-atom-doped precipitated silica having a BET surface area of more than 300 m^2/g and a maximum surface concentration of the foreign atoms of between $1 \cdot 10^{-5}$ and 0.05 $mmol/m^2$, wherein said foreign-atom is selected from the group consisting of Zr, Zn, Ti, P, Cr, V, Sc, Ga, In, Fe, Ag, Sc, Mn, Co, Ni, Cu, and combinations thereof; and wherein said foreign-atoms are on the surface of the silica as well as incorporated into the internal structures of the precipitated silica.

Another aspect of the claimed invention is directed to a process for preparing a foreign-atom-doped precipitated silica, which comprises adding a solution of foreign atoms in the form of organic or inorganic salts to an aqueous sodium silicate solution during addition of sulfuric acid to said aqueous sodium silicate solution; wherein said foreign-atoms are on the surface of the silica as well as incorporated into the internal structures of the precipitates silica.

It is respectfully requested that the Examiner find these and other aspects to be allowable upon consideration of the following.

The rejection of Claims 1-8 under 35 U.S.C. § 103(a) over US 5,591,797 (hereinafter referred to as US '797) is respectfully traversed.

The disclosure of US '797 is directed to transition metal-containing hydrophobic silica. US '797 describes coating pyrogenic (i.e., fumed) silica with a foreign-atom, and subsequently treating the coated silica with an agent that renders said silica hydrophobic (see

Example 1, cols. 10-13). For instance, *pre-formed fumed* silica is homogenized in an aqueous hydrochloric acid/ferric chloride solution containing hexamethyldisilazane, (col. 10, *ll.* 40ff.), in order to prepare transition metal-containing hydrophobic silica.

US '797 does not describe coating precipitated silica. Rather, US '797 suggests that of the silica to be used for transition metal-containing hydrophobic silica, may either be fumed or precipitated silica. US '797 does not make it clear whether the suggested transition metal-containing precipitated silica is either hydrophobic or hydrophilic. The only data presented in US '797's disclosure *pertains to fumed silica and* ***not*** *precipitated silica.*

What is clear is that US '797 does not suggest a foreign-atom doped precipitated silica or a method for making the same, as that which is claimed in Claims 1 and 9, respectfully. In fact, as the following discussion will show, it is impossible to obtain a foreign-atom doped precipitated silica as claimed in Claim 1 based on the process described in US '797. In order to fully appreciate this position, the Examiner's attention is directed to the following background information.

A silica particle comprises different types of hollows. On the one hand there are "channels" leading from the surface to the core of a silica particulate, and on the other hand there are "cages" inside a silica particulate which have no connection to the surface of the particulate. In this context, an image of "channels" and "cages" of silica particulate is analogous to the holes and indentations of "Swiss Cheese," said holes and indentations being present due to air bubbles being trapped in the cheese upon solidification.

Figure 1 is a two-dimensional representation of a cross-section of a silica particulate. The "cages" have to be considered as 3-dimensional cages without contact to the external surface of the silica. In contrast thereto, the "channels" are open to the surface of the external silica, but the "small channels" differ when compared to the "large channels," in that the

constrictive size of the orifice may permit some components to diffuse into the "small channel" while preventing other components access to the same "small channel."

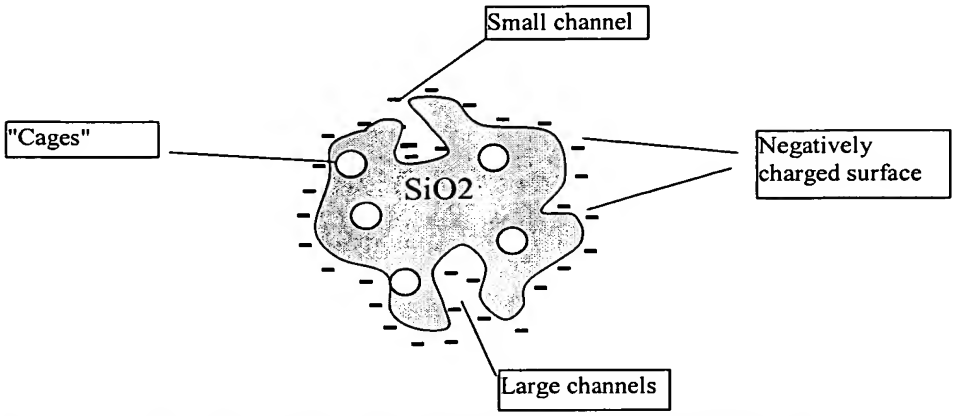

Figure 1. Two-Dimensional Representation of Silica Particulate

As mentioned above, the "cages" have no connection to the surface of the silica. Foreign atoms cannot penetrate into the cages if they are closed. Consequently, it is not possible to introduce foreign atoms into the "cages" of a silica particulate using the process of US '797.

It is noted that the process of US '797 might allow foreign atoms to penetrate into some channels, but not all channels. To understand that phenomena please note that the surface of a silica particulate is negatively charged while the Zr-ions are positively charged. As a consequence, Zr-ions may penetrate into large "channels," but will be bonded at the entrance of a small channel. Figure 2 provides a representation of this situation.

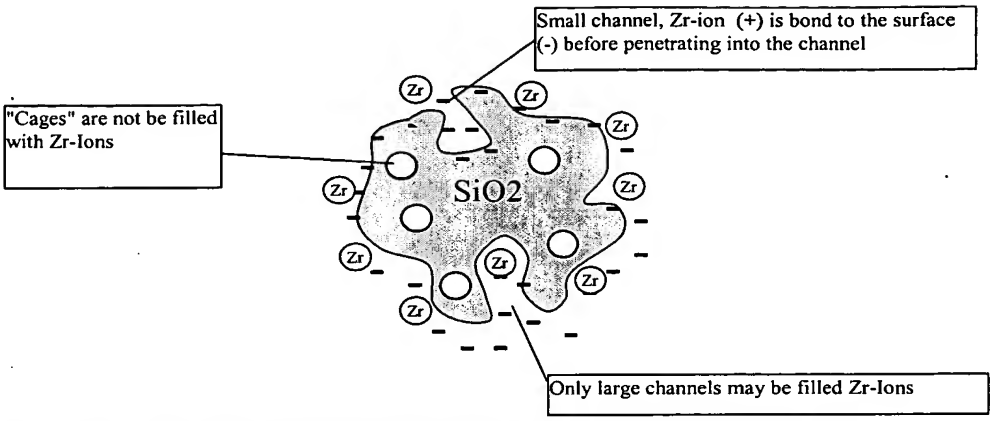

Figure 2. Two-Dimensional Representation of Silica Particulate

In contrast to US '797 the process of the present invention allows for filling of the "cages" and "small channels" with foreign atoms because the foreign atoms are already present during the precipitation step and can be incorporated into the cages and channels before or during they are formed upon precipitation. In this case the Zr-ions are fixed to the surface of the cages by electrostatic forces and the channels themselves. Figure 3 shows a silica particulate according to the present invention:

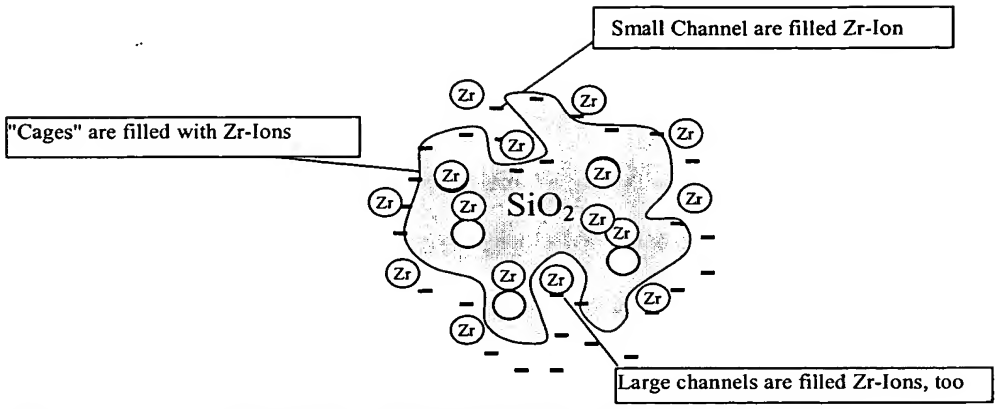

Figure 3. Two-Dimensional Representation of Silica Particulate

Figures 2 and 3 demonstrate the differences between the silica of the invention and silica according to US '797. The silica of the present invention exhibit Zr-ions in "cages" as well as in "small channels" and "large channels" and on the external surface. In contrast thereto, silica according to US '797 exhibit Zr-ions on the external surface and might have some Zr-ions in "large channels," but do not have Zr-ions in "cages" and "small channels," i.e., the internal structures of the precipitated silica.

Accordingly, it is requested that the Examiner withdraw this rejection.

The rejection of Claims 9-17 under 35 U.S.C. § 103(a) over US '797 in view of US Patent No. 6,172,138, which is of record and hereinafter referred to as US '138, is respectfully traversed.

As described above, US '797 neither suggest a foreign-atom doped precipitated silica as claimed in Claim 1, nor a process as claimed in Claim 9.

US '138 suggests that "aluminosilicates [may be] formed by a co-precipitation of a silicate and an aluminate" (col. 5, ℓℓ. 26-28; see also col. 13, ℓℓ. 27-53), but that is the extent of US '138's contribution to this analysis, as this references exclusively discloses aluminum-doped silica. There is no suggestion to be found in this reference that would allow one of

ordinary skill to assume that aluminum might be substituted by any other foreign atom. It is therefore obvious that this reference states that aluminum is the atom of choice if doping of silica is intended. Furthermore, there is no indication in US '138 that would lead one of ordinary skill, when consulting the disclosure of US '797, to obtain a foreign-atom doped precipitated silica, as claimed in Claim 1 or a process described in Claim 9.

Thus, it is believed that the combined disclosures of US '797 and US '138 do not render the claimed invention obvious.

It is respectfully requested that the Examiner acknowledge the same and withdraw this rejection.

Finally, it is requested that the Examiner **acknowledge** Applicants' claim to priority under 35 U.S.C. § 119(a)-(d); and provide Applicants with an indication that the Office has received a certified copy of Applicants' priority document, DE 100 62 449.9, which was filed on December 14, 2000. Applicants provided a certified copy, along with a proper claim to foreign priority, when the application was filed on December 14, 2001.

It is kindly requested that the Examiner allow Claims 1 and 3-20 and pass this application to issue. If there is any outstanding issue that can be resolved prior to allowance, it is requested that the Examiner contact the undersigned individual by telephone.

Respectfully submitted,

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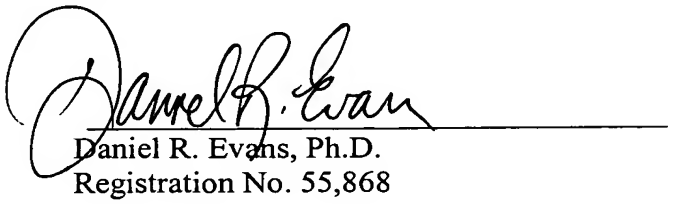
MAIER & NEUSTADT, P.C.
Norman F. Oblon



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